Residues of Forestry Herbicides in Plants of Interest to Native Americans: Progress Report April 1998

Environmental Monitoring and Pest Management Branch
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In recent years, Native Americans have voiced concerns about exposure to forestry herbicides used in National Forests. They are concerned because they gather food, medicinal, ceremonial and basketry plant materials in these forests. As a result, the U.S. Forest Service asked the Department of Pesticide Regulation (DPR) to assess the potential exposure of the plants to forestry herbicides, particularly glyphosate, hexazinone, and triclopyr. DPR initiated a two-phase project. Phase one developed sampling and analytical methods. Phase two, currently in progress, is designed to: 1) find the length of time pesticides last in selected plants and 2) determine how far, if at all, herbicides move away from the treatment areas.

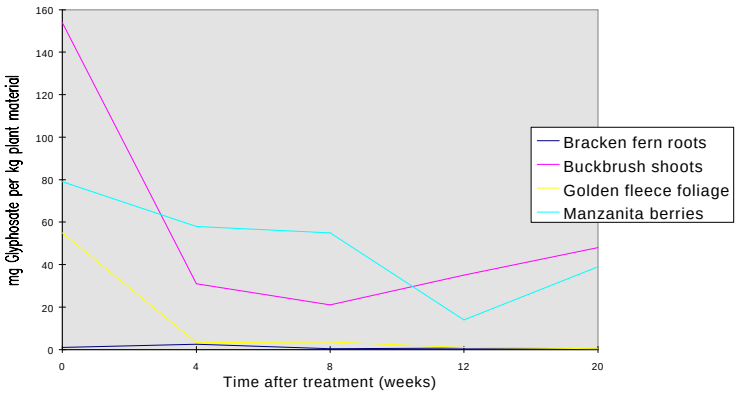
DPR, in consultation with the local California Indians at Stanislaus, Sierra, and Eldorado National Forests, and the U.S. Forest Service developed a monitoring plan. Four herbicide and application method combinations have been selected for monitoring: Pronone® 10G (hexazinone) by air, Velpar® L (hexazinone) by ground, Accord® (glyphosate) by ground, and Garlon® 4 (triclopyr) by ground. Four plants were selected to determine how long the herbicides last after they are sprayed: bracken fern roots, buckbrush shoots, golden fleece foliage, and manzanita berries. DPR collects samples every four to eight weeks for 36 weeks for each herbicide/application combination. To test how far herbicides move, DPR collects samples at four distances ranging from 5 to 100 feet from the edge of the treated area. DPR collects the first samples within one to three days after the treatment. Sampling will likely continue until March of 1999, with the possibility of further sampling if residues are detected in samples collected on the last scheduled date.

Currently, DPR is monitoring 64 treatment sites to determine how long residues last in plants in three National Forests: Eldorado, Stanislaus, and Sierra. DPR has begun monitoring in 28 of the sites, and DPR plans to monitor the remaining sites during 1998-1999. Results from 148 samples taken in 1997 show a general trend of declining residue levels through time.

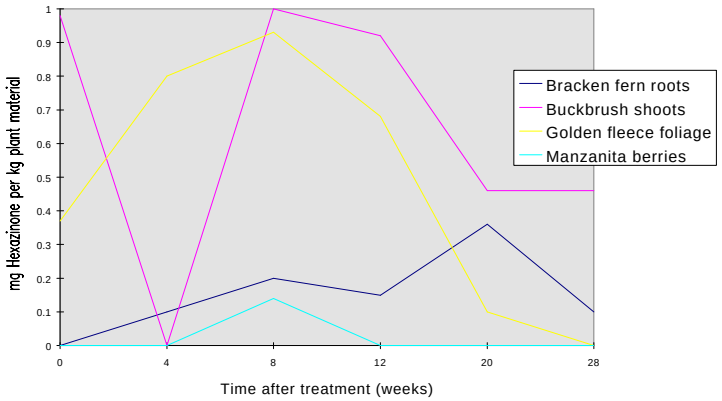
To test how far herbicides move off-site, we plan to monitor areas outside the treatment regions at 24 sites. DPR has begun monitoring at eight of the 24 sites and plans to sample the remaining sites in 1998-1999. DPR has selected three plant species for testing based on availability near treatment areas: bracken fern, buckbrush, and deer brush. Results from 95 samples collected in 1997 show herbicides in six samples at four locations: two at 5-15 feet, and one each at 20-40 feet, 50-70 feet, and 80-100 feet. No obvious patterns to herbicide detection offsite emerged. The probable causes for the detections include herbicide left on plants from previous years or sample contamination. DPR modified its procedures to reduce the chance of sample contamination.

DPR took additional samples in hexazinone treatment areas containing redbud and oaks producing acorns. None of the samples contained a detectable amount of herbicide.

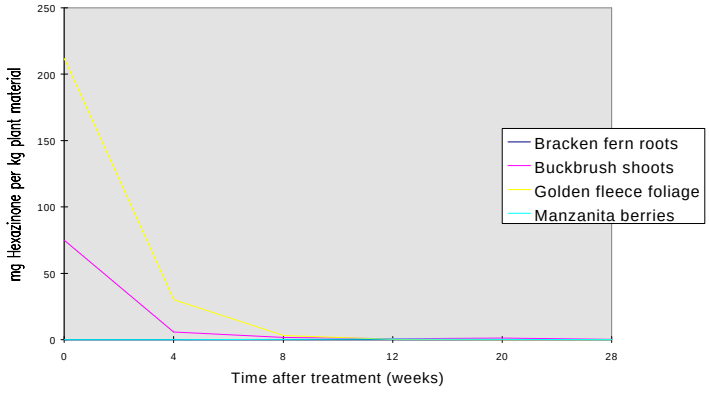
Glyphosate (Accord®) Dissipation Results



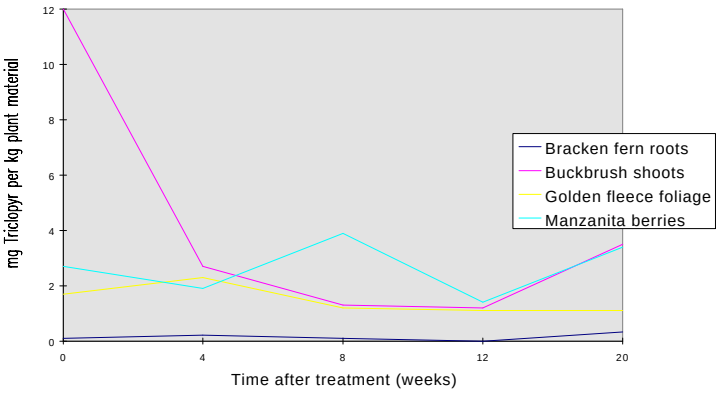
Hexazinone (Pronone®) Dissipation Results



Hexazinone (Velpar®) Dissipation Results



Triclopyr (Garlon®) Dissipation Results



Project director Randy Segawa collecting a Bracken Fern sample.

DPR employee collecting a deerbrush sample.

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